The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DANIEL CHI-HONG LIN, JIAGANG ZHAO,
JIN-LONG CHEN, and GENE CUTLER

Appeal No. 2006-2893
Application No. 09/891,138

ON BRIEF

Before SCHEINER, MILLS, and LINCK, *Administrative Patent Judges.*

LINCK, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of all of the pending claims in Application No. 09/891,138, filed June 25, 2001.[1]

Claims on Appeal

The title of this case is "Novel Receptors." Only claims 6 and 7 remain. They stand rejected for lack of utility under § 101 and lack of enablement under § 112 ¶ 1. These claims read:

> 6. An isolated nucleic acid encoding a polypeptide comprising an amino acid sequence of SEQ ID NO:2.

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[1] The real party in interest is Amgen, Inc.

7. The isolated nucleic acid of claim 6, wherein the nucleic acid comprises the nucleotide sequence of SEQ ID NO:1.

For the reasons given by the Examiner, as further explained below, we affirm.

DISCUSSION

This case turns on a single issue: Is Appellants' claimed invention "useful," as required by 35 USC § 101? If not, then it also would not have enabled "use" of the claimed invention by one skilled in the art, as required by 35 USC § 112 ¶ 1.

According to the specification, Appellants "cloned, for the first time, the mouse polynucleotide sequence encoding a GPCR referred to in the specification as 'TGR18.'" Br. 6. Beyond cloning and sequencing, the specification does not describe any actual experiments conducted with TGR18. Potential utilities identified by Appellants include the following: "modulation of cellular function in cells, for example, kidney cells, in which it is expressed," a "role in renal disease, e.g., hypertension," identification of "modulators of GPCR activity," and identification of the "functional effects" of GPCR activity, such as "calcium ion levels." Br. 6 (citing the specification at 7, 11, 29, 51, and 52). These potential utilities appear to be based on what is generally known about GPCR activity and kidney function. *See* Specification at 7-8, 39-54.

Appellants also reference "Declaration I," executed by Lin, one of the named inventors. Br. 6. According to Appellants, Declaration I describes experiments establishing that "mouse . . . human, and rat TGR18 GPCR all transduce an increase in intracellular calcium." Br. 7. "Succinic acid was the ligand in the experiments summarized in the Lin Declaration I; the ligand was not disclosed in the specification." Br. 7 n. 1.

Finally, Appellants rely on a post-filing publication to argue that "the role of succinate as a ligand for GPCR was an unexpected finding" and therefore "not regarded by those in the art as a general stimulator of GPCR activity." Br. 7 (citing He et al., *Nature,* 429: 188-193, 2004 (hereafter "He")). Further referring to He, Appellants argue that succinate was known to be useful prior to the filing date. Br. 7-8 (citing He, at 191, 192). However, Appellants do not argue that succinate was a known TGR18 ligand prior to the filing date. It appears the connection between succinate and TGR18 was first made and published years after filing. *See* He, at 188, col. 1 (GPR91 was a "previously orphan" GPCR).

The Examiner found that "the claimed invention is not supported by either a specific or substantial utility." Answer 3. More specifically:

> The pending claims are drawn to an isolated nucleic acid encoding a polypeptide referred to as TGR18. The specification discloses that the amino acid sequence of TGR18 has characteristics of a G-protein coupled receptor (GPCR). . . . The fact that TGR18 is a GPCR is not sufficient to infer specific utility because the superfamily of GPCRs includes over 5000 genes, which encode receptors with diverse functions, different activating ligands, different second messenger systems, and different roles in physiology. While all GPCRs share a common structural theme of having seven transmembrane domains, their amino acids sequences are highly divergent, even among subfamilies with similar functions, so it is not possible to infer activity or function from amino acid sequence alone. The specification shows that TGR18 is expressed in the kidney but does not indicate what it does there or what effect activation or inhibition of TGR18 signaling would have on kidney function. There are no working examples of a functional TGR18, and no ligand for the receptor is disclosed. All assertions of utility are nonspecific, such as can be made for any coding nucleic acid or, at best, generic to the class of G-protein coupled receptors. The asserted utilities are not substantial because the disclosure did not establish that the claimed GPCR had an activity that linked it to a physiological process or state. [Answer 3-4.]

With respect to Appellants' argument that the experiments described in the Lin Declaration I establish a specific utility (transducing an increase in intracellular calcium), the Examiner responds:

> [M]any GPCRs modulate changes in intracellular calcium when generally stimulated. This would be expected especially in an experimental system where a GPCR is given an opportunity to interact with promiscuous G-proteins as described in the specification at p.42, lines 26-30. Therefore, although the data presented in the Lin Declaration I show that the claimed GPCR is an active receptor, it does not reveal anything specific about the receptor. [Answer 7.]

Furthermore, as the Examiner noted, the succinic acid ligand used in the Lin experiments was not identified in Appellants' specification. Answer 4. Without the identification of at least one receptor ligand, experiments such as those conducted by Lin to support his declaration would not have been possible.

With respect to Appellants' reliance on He to support their utility arguments, the Examiner responds:

> On p.7, Appellant addresses the He et al. publication in which TGR18 was shown [to] mediate an increase in intracellular calcium in response to succinic acid as ligand. Appellant further points out significant findings discussed in the He et al. paper, specifically that succinic acid was known to regulate re-absorption of phosphate and glucose into the proximal tubule, and to stimulate renin release. Further, He et al. showed that TGR18 was required for succinic acid-induced hypertension in mice. Thus, the He et al. paper provides some of the information that had been lacking in Lin Declaration I concerning the biological significance of succinic acid in the kidney. Had this information been included in the original disclosure, a strong argument for utility of TGR18 might have been established. However, all of these pertinent facts were learned after filing. A GPCR that transduces an increase in intracellular calcium, with succinic acid as its ligand, is not supported by the specification as filed. The terms "succinic acid" or "succinate" do not appear in the disclosure. [Answer 8.]

In reply, Appellants take issue with the Examiner's refusal to consider He as evidence of utility. Reply 4. According to Appellants, "He . . . merely provides

additional data demonstrating the biological relevance of TGR18 in the kidney . . . . Submission of post-filing date evidence is proper for this purpose." Reply 4 (citing *In re Langer*, 503 F.2d 1380, 1391, 183 USPQ 288, 297 (CCPA 1974); *In re Marzocchi*, 439 F.2d 220, 223, 169 USPQ 367, 370 n. 4 (CCPA 1971)).

We agree with the Examiner that the application does not disclose a specific and substantial utility for the claimed invention, as required by the statute. *See In re Fisher*, 421 F.3d 1365, 1371, 76 USPQ2d 1225, 1229 (Fed. Cir. 2005).

In order to meet the "substantial utility" requirement, one skilled in the art must be able to use the claimed invention "in a manner which provides some *immediate benefit to the public.*" *Nelson v. Bowler*, 626 F.2d 853, 856, 206 USPQ 881, 883, *quoted in Fisher*, 421 F.3d at 1371, 76 USPQ2d at 1230 (emphasis Federal Circuit's). In order to meet the "specific utility" requirement, "an application must disclose a use which is not so vague as to be meaningless." *Id.* at 1371, 76 USPQ2d at 1230. Thus, "an asserted use must also show that that claimed invention can be used to provide a well-defined and particular benefit to the public." *Id.*

In the case before us, the utilities described in the specification and referenced by Appellants are based on the general knowledge in the art regarding GPCRs and kidney function and not on any work the inventors conducted with TGR18. Clearly without identifying a ligand capable of modulating the activity of the receptor, no such work was possible. As the Examiner found: "All assertions of utility are nonspecific, such as can be made for any coding nucleic acid or, at best, generic to the class of G-protein coupled receptors." Answer 4.

Appellants argue that the facts of this case are analogous to those in *Nelson.* Br. 9. The Examiner distinguishes the two cases. Answer 9-10. Further Appellants admit that in *Nelson* "the claimed compound . . . was shown to have pharmacological activity." Br. 9. Appellants' specification does not show such activity but rather postulates what activity is "likely." *See, e.g.,* Specification 52, ll. 2-6. We conclude the facts of this case are more analogous to those in *Fisher*: There is "no disclosure in the specification showing that [TGR18 was] used" in any of the potential uses described in the specification; further, any GPCR (or at least any GPCR expressed in the kidneys) "has the potential to perform any one of the alleged uses." *Fisher*, 421 F.3d at 1374, 76 USPQ2d at 1232. Thus, we conclude the specification did not disclose a specific and substantial use for the claimed invention.

We turn to the He publication and its availability to support the utility of Appellants' claimed invention. "Enablement, or utility, is determined as of the application filing date." *In re Brana*, 51 F.3d 1560, 1567 n.19, 34 USPQ2d 1436, 1441 n.19. While it is true that a post-filing date reference can be relied upon in certain situations, we conclude this is not such a situation. *See Gould v. Quigg*, 822 F.2d 1074, 1078, 3 USPQ2d 1302, 1305 (Fed. Cir. 1978) (comparing *In re Hogan*, 559 F.2d 595, 605, 194 USPQ 527, 537 (CCPA 1977) (approving use of "later publications as evidence of the state of the art existing on the filing date of an application") with *In re Glass*, 492 F.2d 1228, 1232, 181 USPQ 31, 34 (CCPA 1974) (stating that later publications cannot be used to supplement an insufficient disclosure)).[2] In this case, He does not

[2] While *Glass* addresses enablement, the same rule applies to utility. *See Brana*, 51 F.3d at 1567 n.19, 34 USPQ2d at 1441 n.19 (both enablement and utility determined as of the filing date).

reflect the state of the art in 2001 but rather discoveries made years later. Thus, Appellants cannot rely upon He to support patentability under sections 101 and 112. And, without He's teachings, the specification fails to disclose a specific and substantial utility for the claimed invention.

Conclusion

We affirm the Examiner's rejection of claims 6 and 7 under 35 U.S.C. §§ 101 and 112 ¶ 1 for the reasons given by the Examiner and above.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2004).

AFFIRMED

TONI R. SCHEINER
Administrative Patent Judge

DEMETRA J. MILLS
Administrative Patent Judge

NANCY J. LINCK
Administrative Patent Judge

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